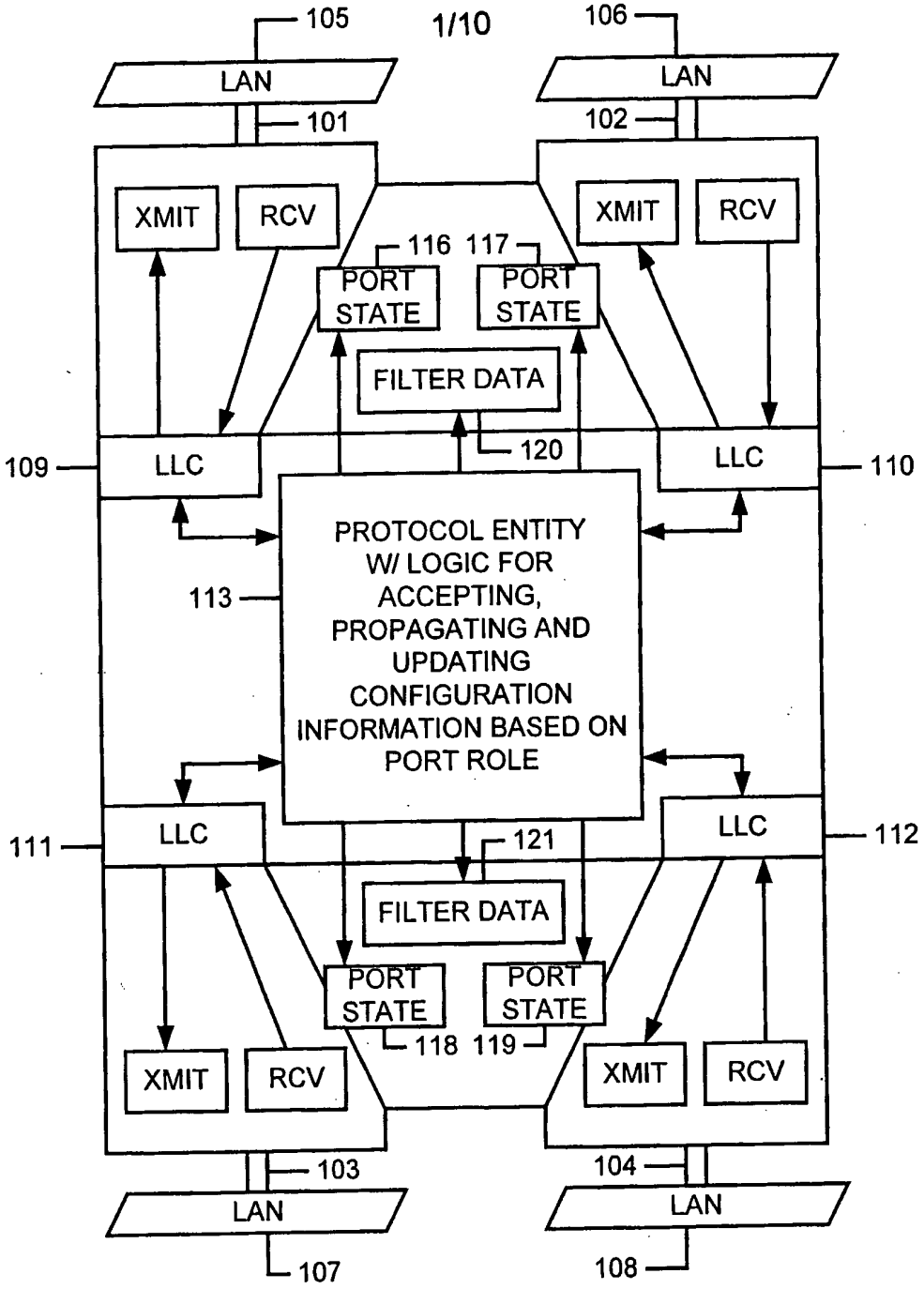
105
LAN
101
106
LAN
102
XMIT
RCV
XMIT
RCV
116
117
PORT STATE
PORT STATE
FILTER DATA
120
109
LLC
LLC
110
PROTOCOL ENTITY W/ LOGIC FOR ACCEPTING, PROPAGATING AND UPDATING CONFIGURATION INFORMATION BASED ON PORT ROLE
113
111
LLC
LLC
112
121
FILTER DATA
PORT STATE
PORT STATE
118
119
XMIT
RCV
XMIT
RCV
103
104
LAN
LAN
107
108

FIG.1

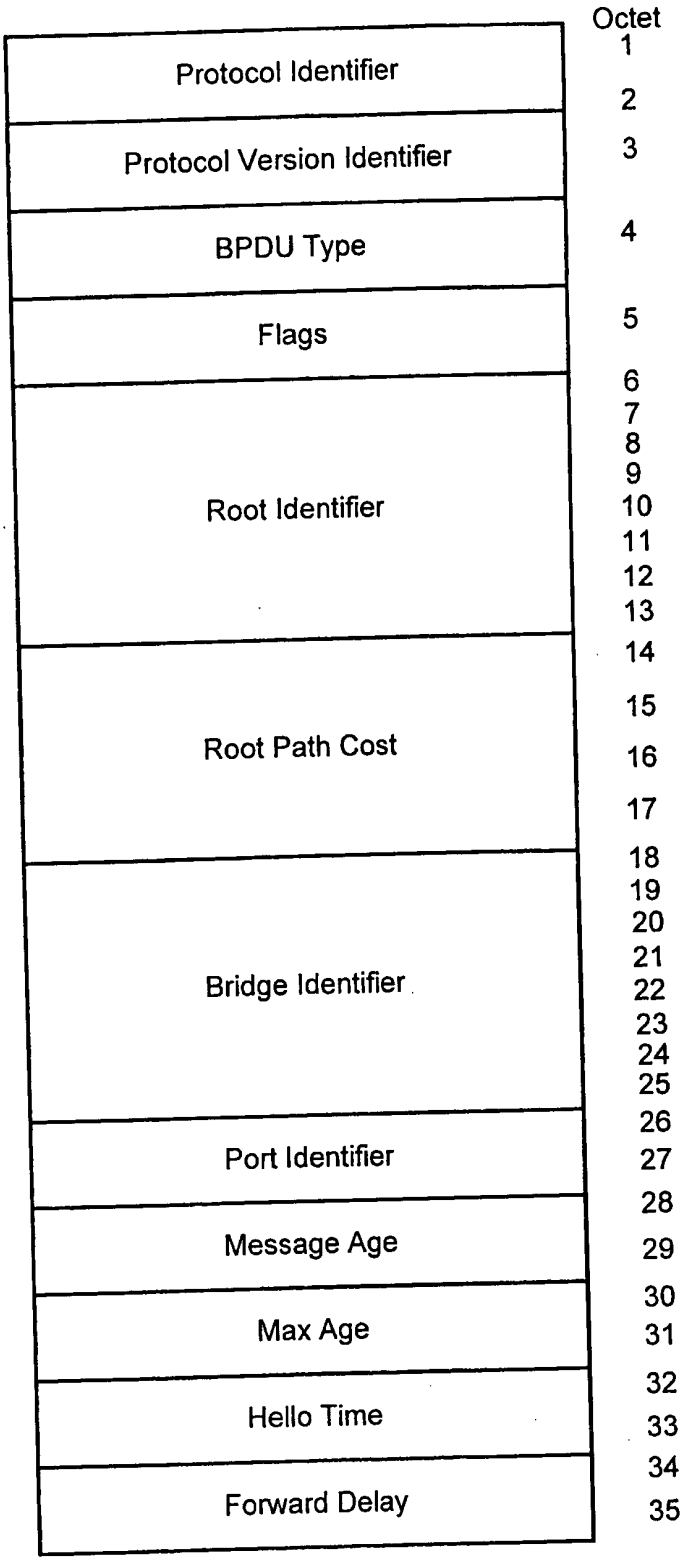

FIG.2
PRIOR ART

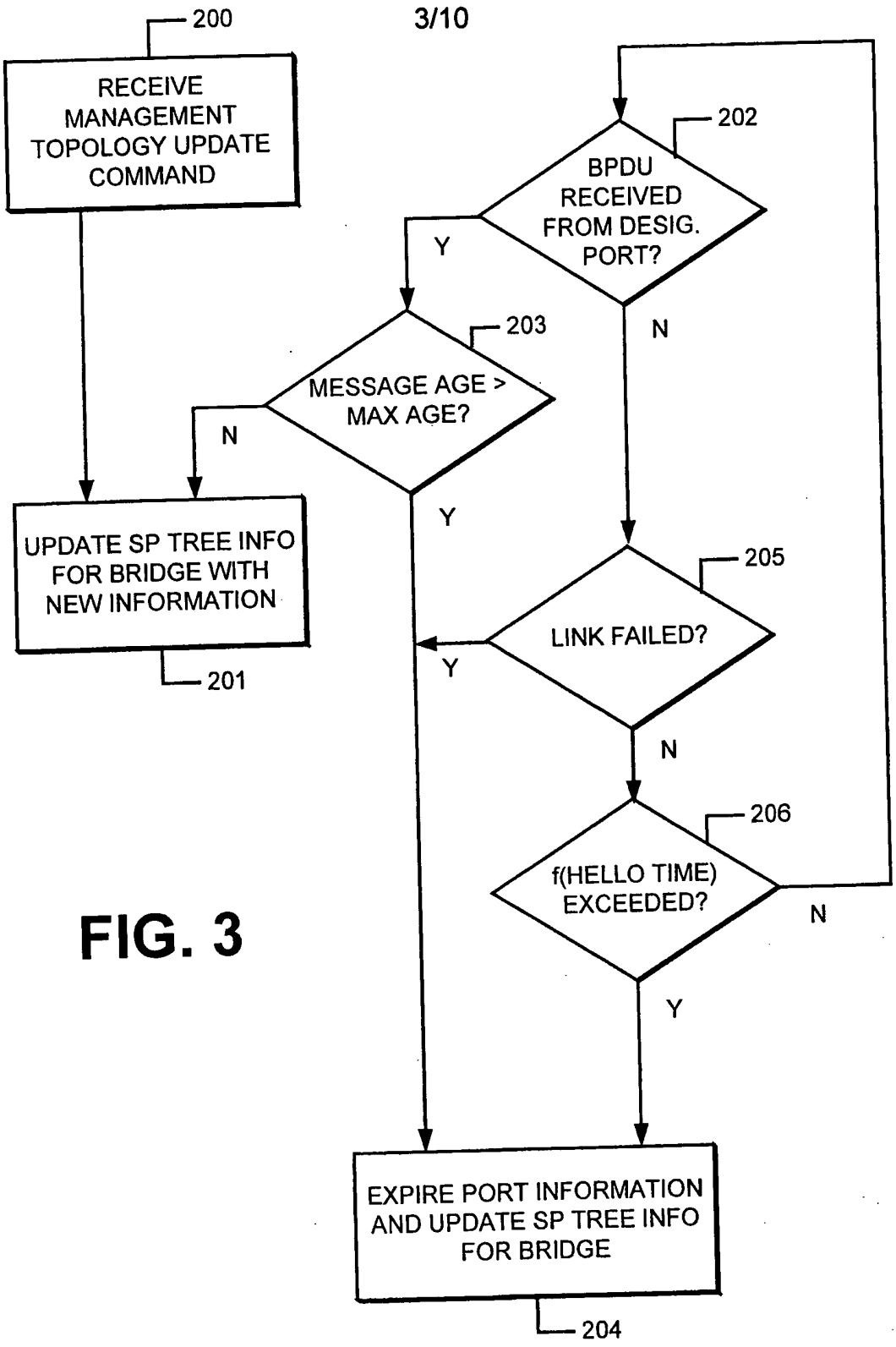
200
RECEIVE MANAGEMENT TOPOLOGY UPDATE COMMAND
202
BPDU RECEIVED FROM DESIG. PORT?
Y
N
203
MESSAGE AGE > MAX AGE?
N
Y
UPDATE SP TREE INFO FOR BRIDGE WITH NEW INFORMATION
201
205
LINK FAILED?
Y
N
206
f(HELLO TIME) EXCEEDED?
N
Y
EXPIRE PORT INFORMATION AND UPDATE SP TREE INFO FOR BRIDGE
204

FIG. 3

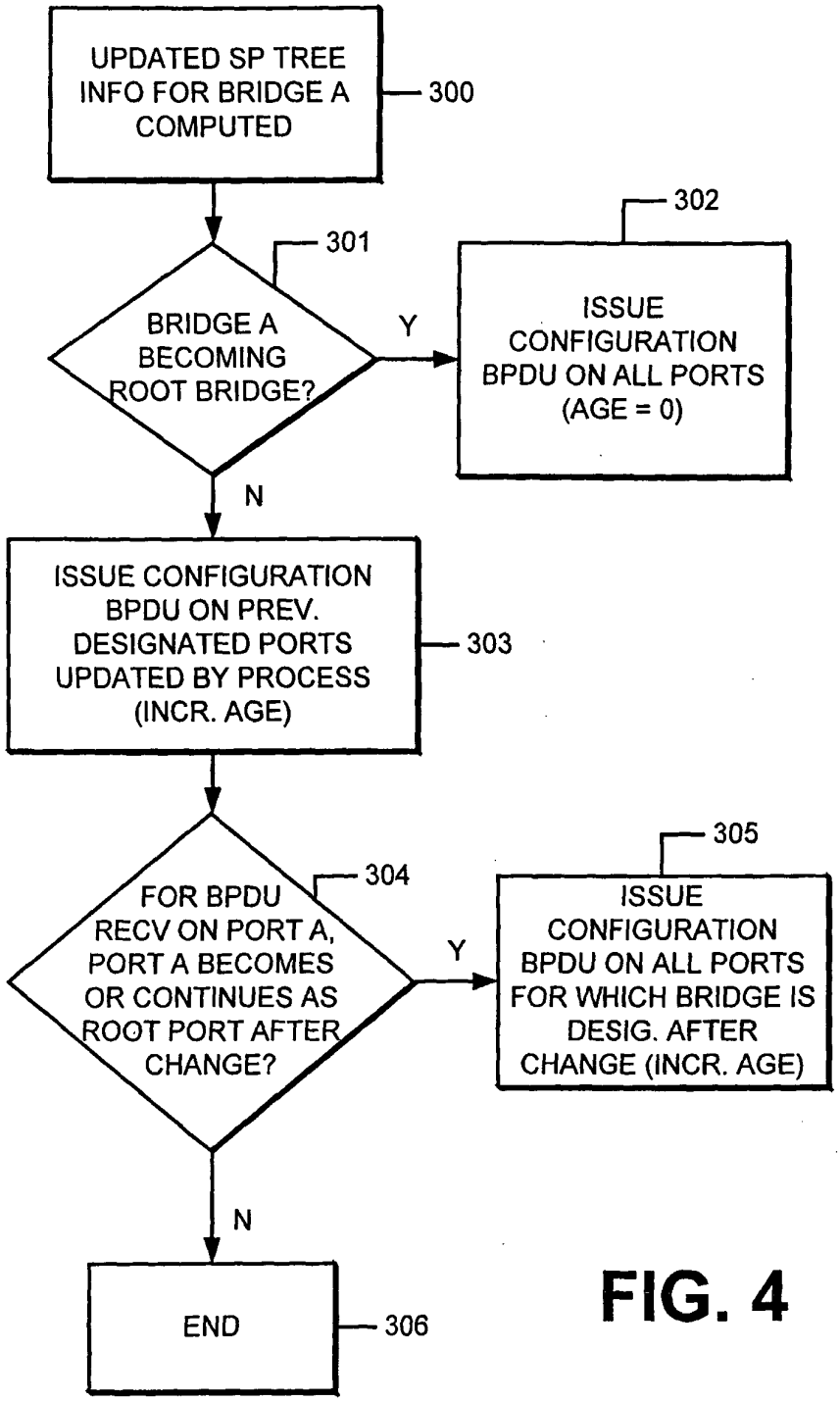
UPDATED SP TREE INFO FOR BRIDGE A COMPUTED
300
301
BRIDGE A BECOMING ROOT BRIDGE?
Y
302
ISSUE CONFIGURATION BPDU ON ALL PORTS (AGE = 0)
N
ISSUE CONFIGURATION BPDU ON PREV. DESIGNATED PORTS UPDATED BY PROCESS (INCR. AGE)
303
304
FOR BPDU RECV ON PORT A, PORT A BECOMES OR CONTINUES AS ROOT PORT AFTER CHANGE?
Y
305
ISSUE CONFIGURATION BPDU ON ALL PORTS FOR WHICH BRIDGE IS DESIG. AFTER CHANGE (INCR. AGE)
N
END
306

FIG. 4

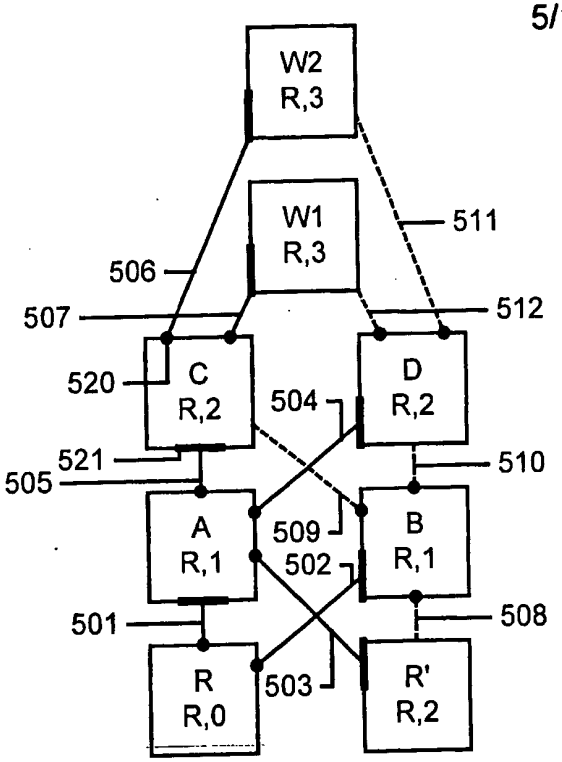

FIG.5A

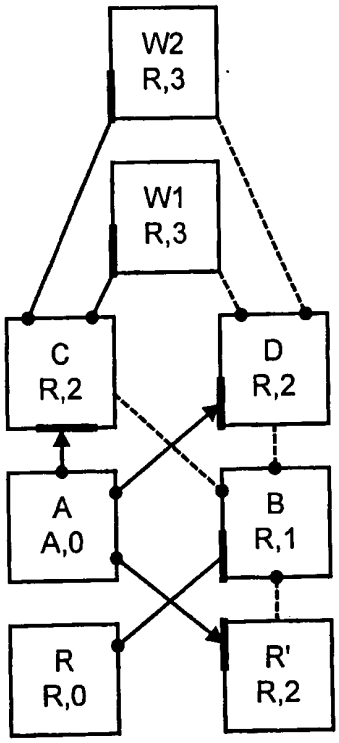

FIG.5B

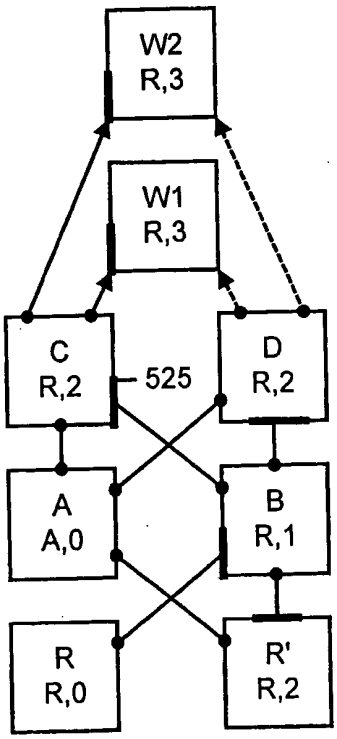

FIG.5C

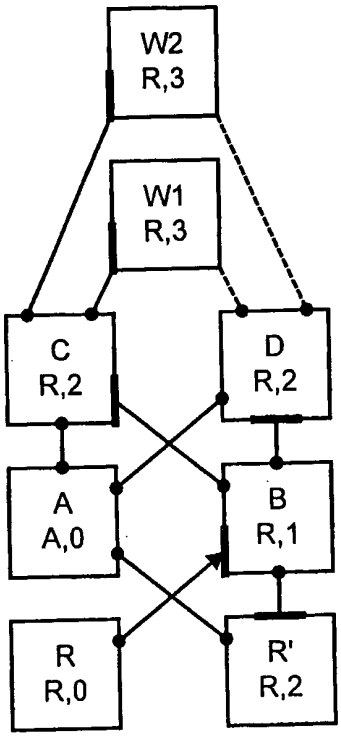

FIG.5D

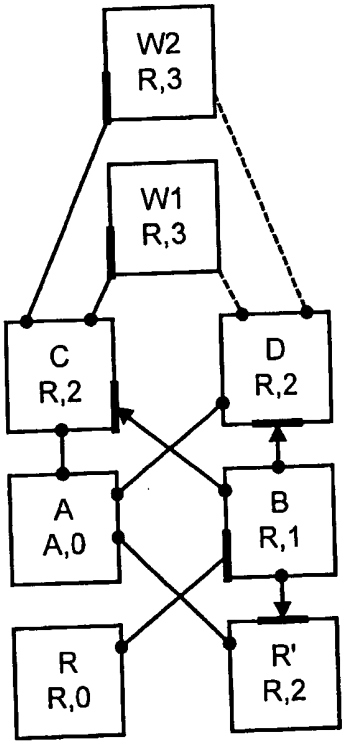

FIG.5E

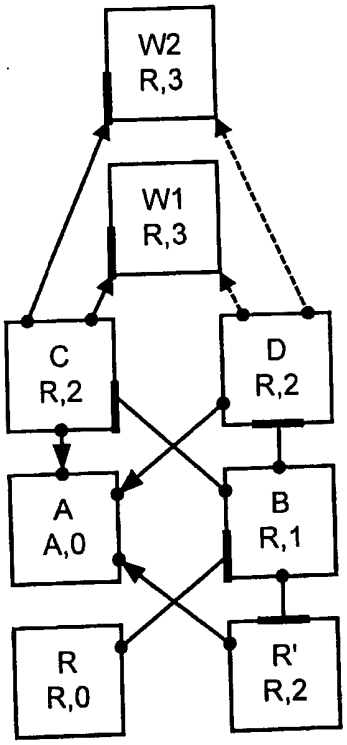

FIG.5F

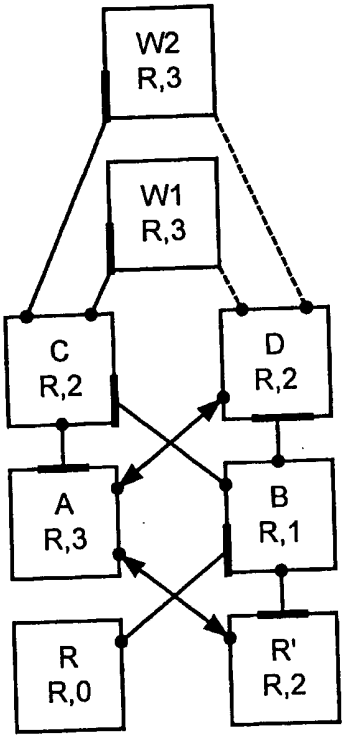

FIG.5G

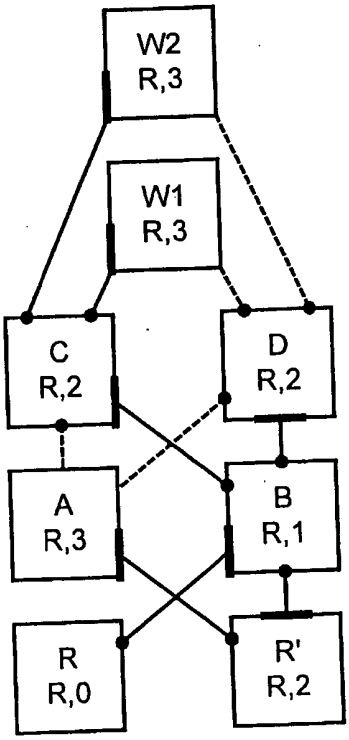

FIG.5H

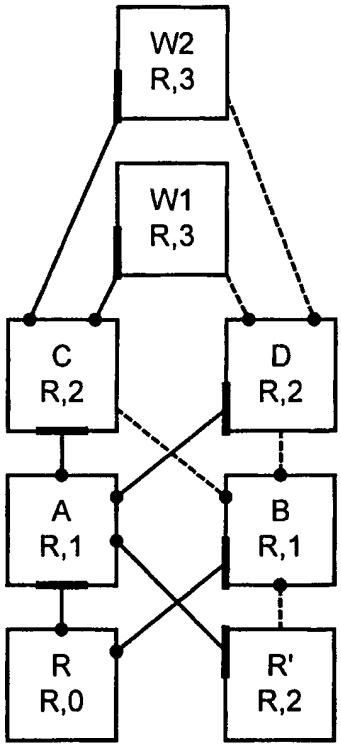

FIG.6A

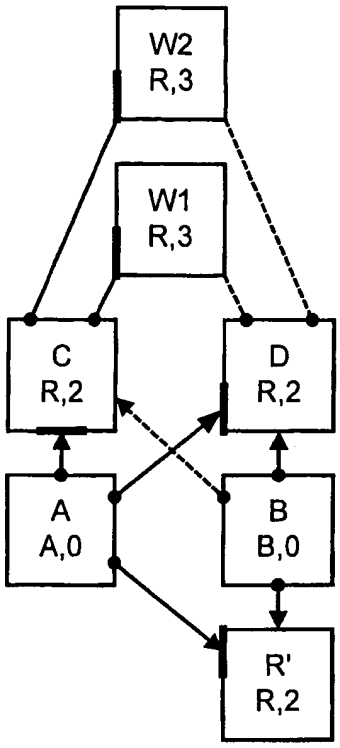

FIG.6B

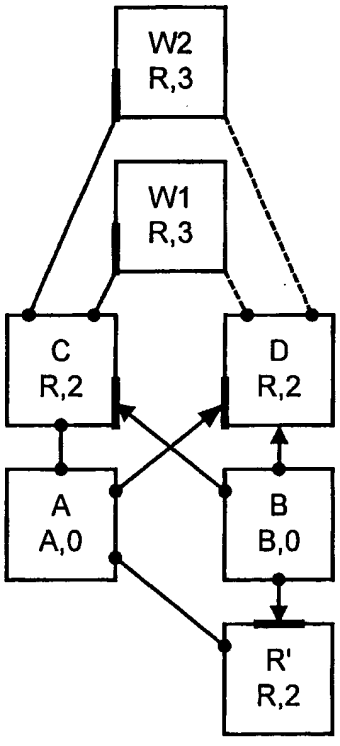

FIG.6C

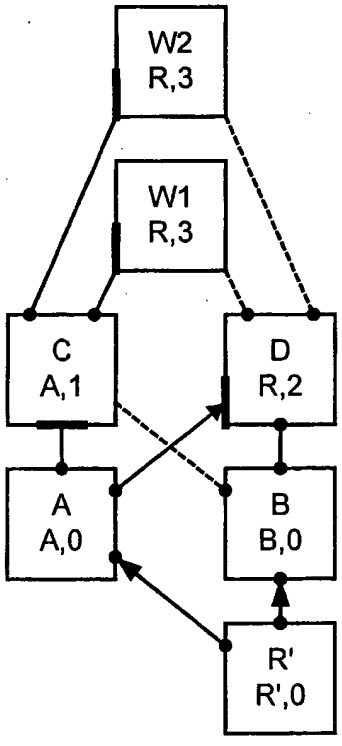

FIG.6D

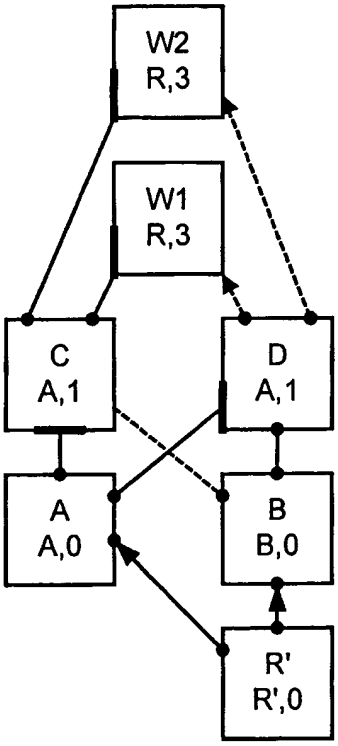

FIG.6E

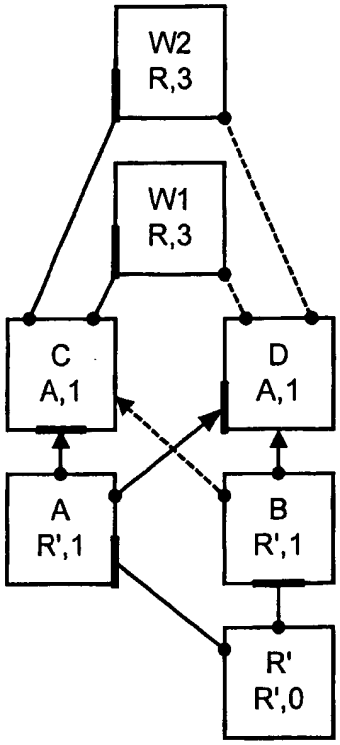

FIG.6F

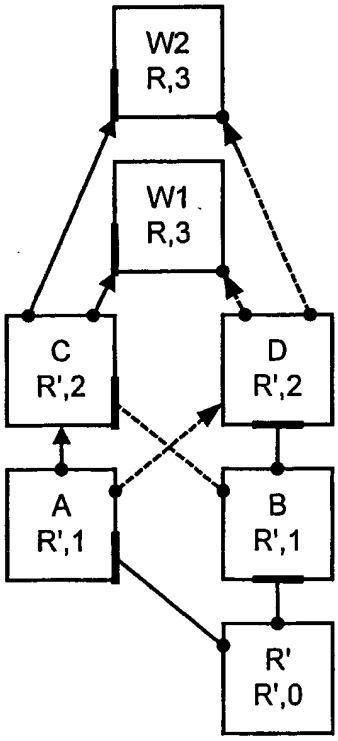

FIG.6G

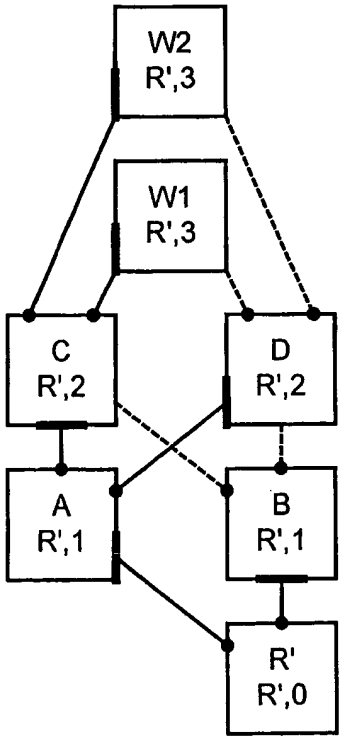

FIG.6H

Inventor: Michael J. Seaman
Title: Spanning Tree with Rapid Propagation of Topology Changes
Application No. ____
Attorney Docket No. 3COM 2035-3

Fig. 7A — Port Roles and States, with enhanced transitions for point-to-point networks only

Port Role	**Disabled Port**	**Root Port**	**Designated Port**			**Alternate Port**
Port State	Disabled	Forwarding	Listening	Learning	Forwarding	Blocking
forwarding?	No	Yes	No	No	Yes	No
learning?	No	Yes	No	Yes	Yes	No
Events	**Transitions**					
become disabled	X	Disabled	Disabled	Disabled	Disabled	Disabled
become root port	X	X	Root Port Forwarding	Root Port Forwarding	Root Port Forwarding	Root Port Forwarding
become designated1[10]	Designated Listening[a]	Designated Listening[a]	X	X	X	Designated Listening
become designated2[11]	Designated Listening[a]	Designated Forwarding	X	X	X	Designated Listening
become alternate[12]	X	Alternate Blocking	Alternate Blocking[d]	Alternate Blocking[d]	Alternate Blocking	X
forward delay timer expiry	X	X	Designated Learning[a]	Designated Forwarding	X	X

FIG. 7A

Fig. 7B — Port States, with enhanced transitions for point-to-point networks only

Port State	Disabled	Listening	Learning	Forwarding	Blocking
forwarding?	No	No	No	Yes	No
learning?	No	No	Yes	Yes	No
Events	**Transitions**				
become disabled	X	Disabled	Disabled	Disabled	Disabled
become root port	X	Forwarding	Forwarding	—	Forwarding
become designated1	Listening[a]	—	—	—	Listening[a]
become designated2	Listening[a]	—	—	—	Listening[a]
become alternate	X	Blocking[d]	Blocking[d]	Blocking	X
forward delay timer expiry	X	Learning[a]	Forwarding	X	X

FIG. 7B

Inventor: Michael J. Seaman
Title: Spanning Tree with Rapid Propagation of Topology Changes
Application No. _____
Attorney Docket No. 3COM 2035-3